

SHIELDING ASSEMBLY ENCLOSING AN ELECTRICAL CONNECTOR
TERMINATING SHIELDED CABLE

1 The present invention relates to a shielding assembly to be used in enclosing a connector terminating fully shielded cable and provide ground path for the shielding of the cable.

5 There are a number of problems in terminating shielded cable. Part of the problem is involved with the actual handling of the cable to separate the conductors from the shielding layer or layers, and another part is how to terminate the shielding in such a manner as to effectively form a ground path between the shielding and an equipment housing or the like. An explanation
10 of termination problems for cable having shielding on a single side and a solution are found in U.S. Patent No. 4,169,646. Cables shielded on both sides require a completely different solution. The schemes for providing a ground path for double sided or fully shielded cable that have heretofore been practiced
15 have proved to be quite unsatisfactory in that they are clumsy in appearance and difficult to perform. The present invention concerns a shielding assembly to be used in cooperation with an existing connector, the connector terminating the conductors of the shielded cable with the subject shielding assembly both
20 enclosing the connector and terminating both shielding layers providing a ground path between the cable shielding and an equipment enclosure or the like. The subject shielding assembly is provided by a pair of mating metallic housing members which define an enclosure receiving the connector therein, and a pair

1 of crimpable cable shield terminating extensions each integral with a respective housing member.

According to the invention a shielding assembly for enclosing an electrical connector and terminating shielding layers of a fully shielded cable is formed by a pair of mating metal housing members together defining a connector enclosure, one of the housing members defining an aperture providing access to a mating face of the connector. Each housing member has an integral T-shaped extension with a plurality of apertures formed in the crossbar portion thereof. Each aperture is surrounded by a series of tangs which extend from the crossbar portions outwardly of the housing members. The apertures are offset with respect to each other so that when the arms of the crossbar portions are folded upon themselves, opposed tanged apertures will interengage.

15 Crimping the arms of the crossbars causes the tangs to penetrate the shielding from opposite sides forming a sandwich with tangs of one side engaging apertures of the other side and vice versa.

The invention includes a method of terminating fully shielded cable having a plurality of conductors arranged in parallel spaced relation and sandwiched between layers of conductive shielding material and enclosed in an insulative sleeve includes the steps of removing a portion of the sleeve to expose the shielding, peeling back the shielding to expose the conductors, terminating the conductors to respective terminals of a connector, terminating the shielding

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1 to respective mating metal housing members, and enclosing the electrical connector within the metal housing members.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings, in
5 which:

FIGURE 1 is an exploded perspective view of the subject invention together with a known connector terminating the conductors of a shielded cable;

FIGURE 2 is a perspective view of the fully assembled
10 shielding assembly of the present invention terminating the shielding layers of a shielded cable; and

FIGURE 3 is a partial transverse section taken along line 3-3 of Figure 2 and showing the termination of the shielding of the cable.

15 The subject invention is shown in combination with a known connector 10 terminating a shielded cable 12. The connector 10 is of the known type, such as disclosed in U.S. Patent No. 4,241,970, the disclosure of which is incorporated herein by reference. The cable 12 is a fully shielded type having a
20 plurality of conductors 14 in an insulative web having shields 16, 18 on opposite sides and enclosed in an outer insulative jacket 20. The shields 16, 18 can be either a thin metal foil or a metal mesh. The subject shielding assembly includes a top housing 22 and a bottom housing 24 both of which are formed
25 metallic members which interfit to together define a cavity 26 of sufficient size and dimension to receive the connector 10 therein.

1 The housing members can be dimensioned for a force fit, as
shown, or with a somewhat looser fit with detents (not shown)
formed to secure the members together. The bottom housing 24
has a profiled aperture 28 providing access to the mating face of
5 the connector 10. The top housing 28 has a cable shield
engaging portion 30 which is formed in a T-shape with a
plurality of apertures 32 formed along the crossbar portion
thereof. The bottom cover 24 has a similar T-shaped portion 34
with a like plurality of apertures 36. The apertures 32, 36 are
10 each surrounded by a plurality of pyramidal tangs or ears. The
outer surfaces of the tangs or ears are substantially parallel to
the axes of the respective apertures and outwardly directed with
respect to the housings 22, 24. The crossbar portions
containing the tangs are separated from the respective housings
15 22, 24 by a short medial portion which is imperforate and forms
the stem of the T-shaped portions 30, 34. The apertures are
slightly offset so that, when the arms of the crossbar portions
30, 34 are folded upon themselves, as shown in Figure 2, the
upper tangs will fit into the lower perforations and vice versa,
20 as shown in Figure 3, so that the tangs puncture the shielding
and sandwich the shielding therebetween. This type of
termination is more fully disclosed in U.S. Patent Nos.
3,138,658; 3,247,316; 3,504,101; 3,541,226; 3,541,227; and Re.
27,743, the disclosures of which are incorporated herein by
25 reference.

1 The individual top and bottom housing members are used to
terminate the shielding of a prepared cable, as shown in Figure
2, by folding the arms of the T-shaped extension upon
themselves, and bringing them into interlocking engagement as
5 shown in Figure 3. The cable is prepared for termination in a
known manner by removing a portion of the insulative jacket 20
to expose the shields 16, 18, peeling back the shields 16, 18 to
expose the conductors 14 for termination in a known connector
10. This engagement has the tangs of the respective apertures
10 32, 36 engaging with like apertures from opposite sides of the
shielding to form a tight gripping relation. A crimping die
which could be used to effect this termination is shown in U.S.
Patent No. 3,706,121, the disclosure of which is incorporated
herein by reference. When the two layers of shielding are
15 terminated, the shielding members 22, 24 are assembled onto the
connector 10 to provide a completely enclosed shield thereabout
while providing grounding for shielding of the cable. The
shielding members 22, 24 can be secured in place by
conventional hardware 38, 40.



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CLAIMS:

- 1 1. A shielding assembly for enclosing an electrical
connector (10) and terminating shielding layers (16, 18) of a fully
shielded cable (12,) said shielding assembly comprising:
a pair of mating metal housing members (22, 24) together
5 defining a connector enclosure (26),
one of said housing members (24) defining an aperture (28)
providing access to a mating face of said connector (10),
each said housing member (22, 24) having an integral
T-shaped extension (30, 34) with a plurality of apertures (32, 36)
10 formed in a crossbar portion thereof, each aperture (32, 36) being
surrounded by a series of tangs extending normal to the
respective crossbar portion and outwardly of the respective
housing member, the apertures being offset with respect to each
other such that when the arms of the crossbar portions are
15 folded upon themselves, opposed tangs interengage,
whereby crimping arms of said crossbar portions (30, 34)
upon themselves causes the tangs of said apertures (32, 36) to
penetrate a shielding layer (16, 18) from opposite sides forming a
sandwich with tangs of one side engaging apertures of the other
20 side and vice versa.
2. A shielding assembly according to claim 1 further
comprising:
means (38, 40) to hold said housing members together in an
assembled condition.

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1 3. A shielding assembly according to claim 1 further comprising:

means (38, 40) to hold said housing members and said connector together in an assembled condition.

5 4. A shielding assembly according to claim 1 wherein each said aperture (32, 36) comprises:

a plurality of pyramidal tangs surrounding each aperture and extending out of the plane of said crossbar portion substantially parallel to the axis of the aperture.

10 5. A shielding assembly according to claim 1 wherein: said housing members (22, 24) mate together with friction fit to form an electrically sealed enclosure (26).

15 6. A method of terminating fully shielded cable (12) in which a plurality of conductors 14 arranged in parallel spaced relation are sandwiched between layers (16, 18) of conductive shielding material and enclosed in an insulative sleeve (20) comprising the steps of:

removing a portion of said sleeve (20) to expose said shielding layers (16, 18),

20 peeling back said shielding layers (16, 18) to expose said conductors (14),

terminating said conductors to respective terminals of an electrical connector,

25 terminating each said shielding layer (16, 18) to a respective half of a mating metal housing shell members (22, 24), and



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- 1 enclosing said electrical connector (10) in
said mating metal housing shell members (22,24).
7. A method according to claim 6 wherein said shield-
ing layers (16,18) are terminated by the steps of
5 placing each of them on an extension (30,34) of a
respective said one of said metal housing shell members
(22,24) each said extension having a plurality of
apertures (32,36) therein surrounded by a series
of outwardly extending tangs, and
10 folding said extensions upon themselves so as
to sandwich said shielding layer between portions
thereof, said aperture tangs penetrating said
shielding layer from one side to engage in apertures
on the other side and vice versa.
- 15 8. A shielding assembly substantially as herein-
before described with reference to, and as shown
in, the drawings.
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